

NON-PUBLIC?: N
ACCESSION #: 8901040137
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Salem Generating Station Unit 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000311

TITLE: Rx. Trip Due To Inadequate Procedural Guidance Resulting in an Equipment Problem

EVENT DATE: 11/28/88 LER #: 88-024-00 REPORT DATE: 12/28/88

OPERATING MODE: 1 POWER LEVEL: 025

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION

50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: M. J. Pollack - LER Coordinator TELEPHONE: 609 339-4022

COMPONENT FAILURE DESCRIPTION:

CAUSE: D SYSTEM: SJ COMPONENT: FCV MANUFACTURER: B040

REPORTABLE TO NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On 11/28/88, during turbine startup, No. 23 Steam Generator (S/G) level increased to 67% resulting in a Turbine Trip. Following the Turbine Trip, a Reactor Trip occurred as a result of No. 22 S/G low-low level. The root cause of this event has been attributed to inadequate procedural guidance. Maintenance procedures do not adequately define how to set the regulator for the BF19 Feedwater Control valve positioner. Subsequently, the 23BF19 positioner regulator was set high. Investigations revealed that level was oscillating on all four S/Gs prior to the turbine trip. These oscillations coupled with the high setting of the regulator led to failure of the positioner causing the valve to lock open momentarily. This led to the Turbine Trip on high-high S/G level. Upon receipt of the trip signal, the Steam Generator Feed Pumps (SGFPs) tripped, by design. With the SGFPs tripped, S/G level began to decrease in all four S/Gs. Operations personnel initiated AFW System flow to the S/Gs. However, the AFW System is designed to maintain reactor power to 5%. Reactor power could not be reduced below 5% (from 25%) quickly enough to prevent the reactor trip on No. 22 S/G low-low level. The 23BF19 positioner has been repaired. The valve was successfully stroke tested. The other BF19 valve positioners were checked and

the other BF19 valves were successfully stroke tested. The procedures for setting the BF19 positioner regulator will be revised to ensure consistent results. Startup of the Unit was successfully completed on 12/2/88. This event will be reviewed for incorporation into applicable training programs.

END OF ABSTRACT

TEXT PAGE 2 OF 4

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as XX

IDENTIFICATION OF OCCURRENCE:

Reactor Trip from 25% power due to inadequate procedural guidance resulting in an equipment problem

Event Date: 11/28/88

Report Date: 12/28/88

This report was initiated by Incident Report No. 88-506.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 Reactor Power 25% - Unit Load 0 MWe

DESCRIPTION OF OCCURRENCE:

On November 28, 1988 at 2305 hours, during turbine startup, No. 23 Steam Generator (S/G) level increased to 67% resulting in a Turbine Trip. Following the Turbine Trip, a Reactor Trip occurred as a result of No. 22 S/G Low-Low Level.

The Unit was stabilized in Mode 3 (Hot Standby), and in accordance with the requirements of the Code of Federal Regulations, 10CFR 50.72 (b) (2) (ii), the Nuclear Regulatory Commission was notified of the automatic actuation of the Reactor Protection System (RPS) JC .

APPARENT CAUSE OF OCCURRENCE:

The root cause of this event has been attributed to inadequate procedural

guidance. Maintenance procedures do not adequately define how to set the regulator for the BF19 Feedwater Control valve positioner. Subsequently, the regulator was set high leading to the trip.

Post trip investigations revealed that level was oscillating, on all four S/Gs, prior to the turbine trip. These oscillations coupled with the high setting of the 23BF19 positioner regulator led to the mechanical failure of the 23BF19 positioner, leading to the Turbine Trip on high-high S/G level. The valve's pneumatic positioner (Bailey Part No. 5321030) failed. The positioning roller had slipped off its cam causing the valve to momentarily lock in the open position. Subsequently, No. 23 S/G continued to be fed until reaching the high-high level Turbine Trip setpoint. Upon receipt of the trip signal, the Steam Generator Feed Pumps (SGFPs) tripped, by design. The SGFPs provide main feedwater to the S/Gs.

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APPARENT CAUSE OF OCCURRENCE: (cont'd)

With the automatic trip of the SGFPs, S/G level began to decrease in all four S/Gs. Operations personnel initiated AFW System flow to the S/Gs. However, the AFW System is only designed to maintain reactor power to 5%. Reactor power could not be reduced below 5% (from 25%) quickly enough to prevent the reactor trip on No. 22 S/G low-low level.

ANALYSIS OF OCCURRENCE:

The S/G high-high level Turbine Trip is an anticipatory trip preventing moisture carry-over, and subsequent damage to the turbine blades.

The S/G low-low level Reactor Trip provides core protection by preventing operation of the unit with S/G water level below the minimum volume required for adequate heat removal capacity. The setpoint assures there is adequate inventory in the S/G, at the time of the trip, to allow for starting delays of the Auxiliary Feedwater Pumps. This prevents dryout of the S/G and the resulting Reactor Coolant System AB (RCS) thermal and hydraulic transients associated with the loss of a S/G. Since this trip occurred with the unit at approximately 25% power, the thermal and hydraulic affects on the RCS were less than those for a trip from full power.

As indicated by the post trip review process, the RPS functioned as designed. This event involved no undue risk to the health and safety of the public. However, because of the automatic actuation of the RPS, the event is reportable in accordance with the Code of Federal Regulations 10CFR 50.73 (a)(2)(iv).

CORRECTIVE ACTION:

The 23BF19 positioner has been repaired. The valve was successfully stroke tested. The other BF19 valve positioners were checked and the other BF19 valves were successfully stroke tested.

The procedures for setting the BF19 positioner regulator will be revised to ensure consistent results.

Startup of the Unit was successfully completed on December 2, 1988. During the startup, steam flow, feed flow, S/G level and BF19 valve demand were monitored with a brush recorder by System Engineering. S/G level and valve demand oscillated and indications for steam flow and feed flow oscillated erratically. The oscillations were dampened by manually adjusting the feedwater pump speed which reduced the differential pressure across the feedwater regulating valves.

PSE&G engineering is still investigating means to provide for smoother startups. The information gathered during this event and the subsequent successful unit startup will be used.

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CORRECTIVE ACTION: (cont'd)

The Nuclear Training Center will review this event and incorporate pertinent information into applicable training programs.

General Manager -
Salem Operations

MJP:pc

SORC Mtg. 88-113

ATTACHMENT 1 TO 8901040137 PAGE 1 OF 1

PSE&G

Public Service Electric and Gas Company
P.O. Box E Hancocks Bridge, New Jersey 08038

Salem Generating Station

December 28, 1988

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Dear Sir:

SALEM GENERATING STATION
LICENSE NO. DPR-75
DOCKET NO. 50-311
UNIT NO. 2
LICENSEE EVENT REPORT 88-024-00

This Licensee Event Report is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR 50.73 (a)(2)(iv). This report is being submitted within thirty (30) days of discovery.

Sincerely yours,

L. K. Miller
General Manager -
Salem Operations

MJP:pc

Distribution

The Energy People

*** END OF DOCUMENT ***

ACCESSION #: 8901040160
